WHAT IS CLAIMED IS:

1. A servo controller comprising:

an FIR filter unit for correcting a position instruction signal;

a mechanical characteristic compensation unit for attenuating components each having a predetermined frequency and each corresponding to a characteristic of a target machine to be driven, which are included in the position instruction signal corrected by said FIR filter unit, so as to compute a plurality of feed-forward signals respectively associated with a position, a speed and a torque of said target machine; and

a feedback compensation unit for driving said target machine to be driven according to the plurality of feed-forward signals respectively associated with the position, speed and torque of said target machine and computed by said mechanical characteristic compensation unit.

2. The servo controller according to Claim 1, wherein said mechanical characteristic compensation unit comprises a position instruction computation unit for attenuating a component having an antiresonance frequency of said target machine to be driven, which is included in the position instruction signal, so as to compute the feed-forward signal associated with the position of said target machine, a differentiator for differentiating the position instruction signal, a speed instruction computation unit for attenuating a component having the antiresonance frequency of said target machine to be driven, which is included in a value computed

by said differentiator, so as to compute the feed-forward signal associated with the speed of said target machine, a computation unit for differentiating the value computed by said differentiator, and for multiplying the differentiated value by a total inertia of said target machine to be driven, and a torque instruction computation unit for attenuating a component having a resonance frequency of said target machine to be driven, which is included in a value computed by said computation unit, so as to compute the feed-forward signal associated with the torque of said target machine.

3. The servo controller according to Claim 1, wherein said mechanical characteristic compensation unit comprises a first-order delay filter for correcting the position instruction signal, said first-order delay filter having a time constant that is set according to an damping constant, an antiresonance frequency, and an inertia of a load of said target machine to be driven so that an influence of attenuation characteristics of said target machine to be driven is reduced, a position instruction computation unit for attenuating a component having the antiresonance frequency of said target machine which is included in the position instruction signal corrected by said first-order delay filter in consideration of the attenuation characteristics of said target machine to be driven so as to compute the feed-forward signal associated with the position of said target machine to be driven, a differentiator for differentiating the position instruction signal corrected by said first-order delay filter, a speed instruction computation unit for attenuating a component having the antiresonance frequency of said target machine

which is included in the position instruction signal differentiated by said differentiator in consideration of the attenuation characteristics of said target machine to be driven so as to compute the feed-forward signal associated with the speed of said target machine to be driven, a computation unit for differentiating a value computed by said differentiator, and for multiplying the differentiated value by a total inertia of said target machine to be driven, and a torque instruction computation unit for attenuating a component having a resonance frequency of said target machine to be driven, which is included in a value computed by said computation unit, in consideration of the attenuation characteristics of said target machine to be driven, so as to compute the feed-forward signal associated with the torque of said target machine.

4. The servo controller according to Claim 1, wherein said FIR filter unit is provided with two or more moving average filters each having a time constant that is set based on requested path accuracy.

5. The servo controller according to Claim 1, wherein said mechanical characteristic compensation unit comprises an n*th*-order filter (n is an arbitrary natural number) for correcting the position instruction signal, the n*th*-order filter having a property of cutting off a component having a desired frequency.

6. The servo controller according to Claim 1, further comprising a position instruction correction unit for

correcting the position instruction signal so that an influence of said FIR filter unit upon a gain of said FIR filter unit itself is reduced.

7. The servo controller according to Claim 6, wherein said position instruction correction unit corrects the position instruction signal by adding a value that is obtained by multiplying the differentiated position instruction signal by a coefficient to the position instruction signal.

8. The servo controller according to Claim 1, further comprising a simulated position control loop unit for computing a simulated speed signal according to both the feed-forward signal associated with the position of said target machine and the feed-forward signal associated with the speed of said target machine, which are computed by said mechanical characteristic compensation unit, a torque correction signal computation unit for computing a torque correction signal according to a change in a sign of the simulated speed signal computed by said simulated position control loop unit when a direction of rotation of said target machine to be driven is reversed, and for correcting the feed-forward signal associated with the torque of said target machine, which is computed by said mechanical characteristic compensation unit, according to the torque correction signal.

9. A servo controller comprising:

a differentiator for differentiating a position instruction signal so as to compute a feed-forward signal associated with a speed of a target machine to be driven;

a computation unit for differentiating a value computed by said differentiator, and for multiplying the differentiated value by a total inertia of said target machine to be driven;

a vibration reduction filter for attenuating a component having a resonance frequency of said target machine to be driven, which is included in a value computed by said computation unit, and for amplifying a component having an antiresonance frequency of said target machine to be driven, which is included in the value computed by said computation unit, so as to compute a feed-forward signal associated with a torque of said target machine to be driven; and

a feedback compensation unit for driving said target machine to be driven according to the position instruction signal, the feed-forward signal associated with the speed of said target machine to be driven and computed by said differentiator, and the feed-forward signal associated with the torque of said target machine to be driven and computed by said vibration reduction filter.

10. The servo controller according to Claim 9, further comprising a position instruction correction unit for correcting the position instruction signal so that an influence of said FIR filter unit upon a gain of said FIR filter unit itself is reduced.

11. The servo controller according to Claim 10, wherein said position instruction correction unit corrects the position instruction signal by adding a value that is obtained by multiplying the differentiated position instruction signal by a coefficient to the position instruction signal.

12. The servo controller according to Claim 9, further comprising a simulated position control loop unit for computing a simulated speed signal according to both the feed-forward signal associated with the position of said target machine and the feed-forward signal associated with the speed of said target machine, which are computed by said mechanical characteristic compensation unit, a torque correction signal computation unit for computing a torque correction signal according to a change in a sign of the simulated speed signal computed by said simulated position control loop unit when a direction of rotation of said target machine to be driven is reversed, and for correcting the feed-forward signal associated with the torque of said target machine, which is computed by said mechanical characteristic compensation unit, according to the torque correction signal.